

## REMARKS

The last Office Action has been carefully considered.

Claims 30, 32, 46 and 48-51 were rejected under 35 USC 103(a) over the U.S. patents to Coetzee and Ryu, and further in view of the U.S. patents to Owen and Drake.

Claim 31 was rejected as Claim 30, and further in view of the U.S. patent to Guice.

Claims 34-35 have been rejected under 35 USC 103(a) as Claim 30, and further in view of the patent to Cook.

Claim 38 was rejected under 35 USC 103(a) as Claim 30, and further in view of the U.S. patent to Connelly.

Claim 44 was rejected under 35 USC 103(a) as Claim 30, and further in view of the Japanese publication to Yomei.

Claim 45 was rejected under 35 USC 103(a) over the Coetzee, Ryu, Owen, Drake and Yomei references, and further in view of the patent to Mosby.

Claim 47 was rejected under 35 USC 103(a) as Claim 30 and further in view of the U.S. patent to Mullens.

Also, Claims 30-32, 34-35, 38, 44-51 are rejected under 35 USC 112.

It is believed to be advisable to analyze first of all the Examiner's formal rejections of the claims.

The Examiner indicated that in his opinion the recitation of the refrigerant being a pure organic substance in Claim 30 was unclear. At the same time he interpreted this statement that the refrigerant is an organic substance. The Examiner's interpretation is correct. The Examiner's interpretation of the statement that the refrigerant is a refrigerant selected from the group consisting of... is also correct. For the purpose of the examination, the Examiner correctly interpreted the above mentioned statement.

It is believed that therefore these statements can be acceptable, or otherwise the applicants might correct them correspondingly. The Examiner's advice is respectfully requested.

The same is true with respect to Claim 49. It can be kept as it is since the Examiner's interpretation was correct, or amended. The Examiner's advice is respectfully requested with respect to Claim 49 as well.

Turning now to the Examiner's rejection of the claims over the art, it is respectfully submitted that Claim 30, the broadest claim on file, clearly and patentably distinguishes the present invention from the prior art applied by the Examiner.

Claim 30, the broadest claim on file, defines a transport container for keeping frozen material chilled, comprising the following components:

- an insulating chamber;

- an insulation which is a superinsulation with a coefficient of thermal conductivity  $\lambda$  of  $< 0.005 \text{ W/m K}$  and encloses said insulating chamber;

- an inner container arranged in said insulating chamber,

- said inner container having at least one chilling chamber for the material and at least one refrigerant chamber which is permanently hermetically sealed, such that there is no insulation between said inner container and said chilling chamber; and

a refrigerant located in said refrigerant chamber and giving off cold by solid/liquid phase transformation,

said refrigerant being a pure organic substance undergoing the phase transformation between solid and liquid state in a temperature range from -15° to -100°C, and having a heat of melting of at least 50 J/ml.

The present invention is designed to enable building a cost effective deep frozen tissue bank, which is badly needed for state of the art molecular diagnostic research to enable finally personalized medicine. While there are functional technical solutions known (like liquid nitrogen or dry ice shipments) those solutions are classified as dangerous goods shipment and are prohibitively expensive. Many attempts have been made to solve that problem but the simple fact is that none of them resolved all involved issues or yielded a practical solution.

The unique combination of several key elements in the present invention are essential to eliminate the disadvantages of the prior art and to work highly advantageously and perfectly for the intended use, which is to provide a container, fit for shipping small deep frozen specimen with ordinary courier services in a cost effective way.

The present invention addresses for the first time in unique way all issues and represents finally the thought-after enabling technology for

state of the art molecular tissue banking being the basis for personalized treatment.

Only the combination of the following elements allows meeting the limited physical window with the necessary surface/volume ration and the practical window of shipping with acceptable weight and with no significant transport restrictions:

- Super insulation  $<0.005\text{W/m K}$  is essential and responsible for achieving cooling times of several days with a parcel size, which can be transported by courier.

- The heat of melting of  $>50\text{J/ml}$  is essential and responsible for keeping the volume of the refrigerant sufficiently low to achieve a parcel size, which can be transported by courier.

- The choice of a pure organic substance is essential and responsible for ensuring a sharp melting temperature (mixtures do not have that defined melting temperature), keeping the weight low enough for shipment (e.g. organic substances have usually a density below  $1\text{g/ml}$  while mercury has  $10\text{g/ml}$ ) and ensuring that no dangerous good requirements are applicable (e.g. n-hexanol as a pure organic substance meets all required parameters).

None of the references disclose the above mentioned new features of the present invention. The references contain no hint, suggestion or motivations for combining them with one another. The references do not provide disclosures for the above specified features, neither they accomplish the highly advantageous results which are accomplished by the present invention. Only the present invention, which provides the above mentioned exceptionally important features, with their interaction and interjunction, provides for the highly advantageous results which cannot be accomplished by the solutions disclosed in the references. It should be also mentioned that multiple references have been combined by the Examiner, which additionally shows that the present invention cannot be considered as obvious.

In view of the above presented remarks and amendments, it is believed that Claim 30 should be considered as patentably distinguishing over the art and should be allowed.

As for the dependent claims, these claims depend on Claim 30, they share its allowable features, and they should be allowed as well.

Reconsideration and allowance of the present application is most respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place this case in condition for final allowance, then it is respectfully requested that such amendments or corrections be carried out by Examiner's Amendment, and the case be passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned (at 631-549-4700).

Respectfully submitted,  
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